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NEOTROPICAL MONOGENEA.* 5. FIVE NEW SPECIES FROM THE ARUANÃ, *OSTEOGLOSSUM BICIRROSUM* VANDELLI, A FRESHWATER TELEOST FROM BRAZIL, WITH THE PROPOSAL OF *GONOCLEITHRUM* N. GEN. (DACTYLOGYRIDAE: ANCYROCEPHALINAE)

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Abstract.—*Gonocleithrum* n. gen. (Dactylogyridae: Ancyrocephalinae) is proposed for five new species collected from the gills of the aruanã, *Osteoglossum bicirrosum* Vandelli, from Janauacá Lake, near the south bank of the Solimões River, Manaus, Amazonas, Brazil, as follows: *G. planacrus*, *G. aruanae*, *G. coenoideum*, *G. cursitans*, and *G. planacroideum* new species. *Gonocleithrum* is similar to *Urocleidoides* Mizelle and Price, 1964, but has a ventral gonadal bar lying near the anterior end of the ovary. A table is presented showing the known freshwater monogenean fauna of fishes from the Neotropical Region.

The Neotropical Region and particularly South America support an unique freshwater monogenean fauna which differs significantly from that of North America. Of the 26 known genera of Monogenea from this region (*Gonocleithrum* n. gen. included), 23 are at present restricted under natural conditions to the neotropics (Table 1). In addition, re-examination of the eight species included in *Cleidodiscus* and *Urocleidus* (both North American genera) will undoubtedly result in their transfer to other genera unique to the Neotropical Region.

Gussev (1978) suggests that the South American fauna of Monogenea has an ancient evolutionary relationship to that of Africa and in fact considers the African genus *Characidotrema* a junior synonym of *Jainus*. While we do not accept this synonymy, since it is based on information published in original articles and not on reexamination of the species involved, the apparent resemblance between species of these genera provides support for Gussev's hypothesis. Although studies on the Neotropical and the Ethiopian (African) Monogenea have just begun to determine the faunas present, a more thorough knowledge of both is necessary to substantiate the relationship.

Material and Methods

The host, *Osteoglossum bicirrosum* Vandelli, was collected on two occasions from Janauacá Lake, near the south bank of the Solimões River, Manaus, Amazonas, Brazil, on 21 March and 14 August 1978, respectively. These fish were

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* The title of our series on Neotropical monogeneans is changed to conform with resolutions of the Round Table Discussion, *Monogenea: Problems of Systematics Biology and Ecology*, held on 23 August, 1978 during the IV International Congress of Parasitology in Warsaw, Poland (Euzet and Prost 1981, Review Advances Parasitology, Warszawa 1003-1004).

Table 1.—Monogenea from freshwater fishes of the Neotropical Region.

	Parasite	Host	Reference
Gyrodactylidae			
Gyrodactylinae			
"*Gyrodactylus*"	*G. neotropicalis*	*Astyanax fasciatus*	Kritsky and Fritts (1970)
	G. costaricensis	*Poecilia sphenops*	Kritsky and Fritts (1970)
	G. bullatarudis	*Poecilia sphenops*	Kritsky and Fritts (1970)
Phanerothecium	*P. caballeroi*	*Cephalosilurus zungaro*	Kritsky and Thatcher (1977)
Paragyrodactyloides	*P. superbus*	*Corydoras paleatus*	Szidat (1973)
Isancistrinae			
Anacanthocotyle	*A. anacanthocotyle*	*Astyanax fasciatus*	Kritsky and Fritts (1970)
Dactylogyridae			
Dactylogyrinae			
Trinidactylus	*T. cichlasomatis*	*Cichlasoma bimaculatum*	Hanek, Molnar, and Fernando (1974)
Trinigyrus	*T. hypostomatis*	*Hypostomus robinii*	Hanek, Molnar, and Fernando (1974)
Anacanthorinae			
Anacanthorus	*A. anacanthorus*	*Serrasalmus nattereri*	Mizelle and Price (1965)
	A. brazilensis	*Serrasalmus nattereri*	Mizelle and Price (1965)
	A. brevis	*Brycon melanopterus*	Mizelle and Kritsky (1969b)
	A. colombianus	*Salminus affinis*	Kritsky and Thatcher (1974)
	A. cuticulovaginus	*Salminus affinis*	Kritsky and Thatcher (1974)
	A. elegans	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1979)
	A. kruidenieri	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1979)
	A. neotropicalis	*Serrassalmus nattereri*	Mizelle and Price (1965)
	A. spathulatus	*Colossoma bidens*	Kritsky, Thatcher, and Kayton (1979)
		C. macropomum	Kritsky, Thatcher, and Kayton (1979)
	A. spiralocirrus	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1979)
Anacanthoroides	*A. mizellei*	*Prochilodus reticulatus*	Kritsky and Thatcher (1976)
Ancyrocephalinae			
Amphocleithrium	*A. paraguayensis*	*Pseudoplatisma* sp.	Price and Romero (1969)
"*Cichlidogyrus*"	**C. sclerosus*	*Tilapia mossambica*	Kritsky and Thatcher (1974)
	**C. tilapiae*	*Tilapia mossambica*	Kritsky and Thatcher (1974)

Table 1.—Continued.

	Parasite	Host	Reference
"*Cleidodiscus*"	*C. amazonensis*	*Serrasalmus nattereri*	Mizelle and Price (1965)
	C. microcirrus	*Hemiodus semitaeniatus*	Price and Schlueter (1967)
	C. piranhus	*Serrasalmus nattereri*	Mizelle and Price (1965)
	C. serrasalmus	*Serrasalmus nattereri*	Mizelle and Price (1965)
Dawestrema	*D. cycloancistrium*	*Arapaima gigas*	Price and Nowlin (1967)
Fridericianella	**F. ovicola*	*Arius commersonii*	Brandes (1894)
Gonocleithrum	*G. aruanae*	*Osteoglossum bicirrosum*	Kritsky and Thatcher (*nobis*)
	G. coenoideum	*Osteoglossum bicirrosum*	Kritsky and Thatcher (*nobis*)
	G. cursitans	*Osteoglossum bicirrosum*	Kritsky and Thatcher (*nobis*)
	G. planacroideum	*Osteoglossum bicirrosum*	Kritsky and Thatcher (*nobis*)
	G. planacrus	*Osteoglossum bicirrosum*	Kritsky and Thatcher (*nobis*)
Jainus	*J. amazonensis*	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1980)
	J. hexops	*Astyanax fasciatus*	Kritsky and Leiby (1972)
	J. jainus	*Chalceus macrolepidotus*	Mizelle, Kritsky, and Crane (1968)
	J. robustus	*Creatochanes affinis*	Mizelle, Kritsky, and Crane (1968)
Longihaptor	*L. longihaptor*	*Cichla ocellaris*	Mizelle and Kritsky (1969a)
Monocleithrium	*M. lavergneae*	*Hemiodus semitaeniatus*	Price and McMahon (1966)
Tereancistrum	*T. kerri*	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1980)
	T. ornatus	*Prochilodus reticulatus*	Kritsky, Thatcher, and Kayton (1980)
	T. parvus	*Leporinus fasciatus*	Kritsky, Thatcher, and Kayton (1980)
Trinibaculum	*T. brazilensis*	*Brycon melanopterus*	Kritsky, Thatcher, and Kayton (1980)
Unilatus	*U. unilatus*	*Hypostomus robinii*	Molnar, Hanek, and Fernando (1974)
		Plecostomus sp.	Mizelle and Kritsky (1967)
	U. anoculus	*Plecostomus bolivianus*	Price (1968)
	U. brittani	*Plecostomus* sp.	Mizelle, Kritsky, and Crane (1968)
Urocleidoides	*U. affinis*	*Creatochanes affinis*	Mizelle, Kritsky, and Crane (1968)
	U. alii	*Cichlasoma bimaculatum*	Molnar, Hanek, and Fernando (1974)
	U. amazonensis	*Phractocephalus hemiliopterus*	Mizelle and Kritsky (1969a)
	U. anops	*Characidium caucanum*	Kritsky and Thatcher (1974)
	U. carapus	*Gymnotus carapo*	Mizelle, Kritsky, and Crane (1968)
	U. catus	*Phractocephalus hemiliopterus*	Mizelle and Kritsky (1969a)
	U. chavarriai	*Rhamdia* sp.	Price (1938)

Table 1.—Continued.

	Parasite	Host	Reference
Urocleidoides.—Continued.		*R. quelen*	Molnar, Hanek, and Fernando (1974)
		R. sebae	Molnar, Hanek, and Fernando (1974)
	U. cichlasomatis	*Cichlasoma bimaculatum*	Molnar, Hanek, and Fernando (1974)
	U. corydori	*Corydoras aeneus*	Molnar, Hanek, and Fernando (1974)
	U. costaricensis	*Astynax fasciatus*	Price and Bussing (1967)
			Kritsky and Leiby (1972)
			Kritsky and Thatcher (1974)
		A. bimaculatus	Molnar, Hanek, and Fernando (1974)
		Curimata argentea	Molnar, Hanek, and Fernando (1974)
	U. curimatae	*Curimata argentea*	Molnar, Hanek, and Fernando (1974)
	U. dobosi	*Cichlasoma bimaculatum*	Molnar, Hanek, and Fernando (1974)
	U. gymnotus	*Gymnotus carapo*	Mizelle, Kritsky and Crane (1968)
	U. heteroancistrium	*Astyanax fasciatus*	Price and Bussing (1968)
			Kritsky and Leiby (1972)
			Kritsky and Thatcher (1974)
	U. kabatai	*Astyanax bimaculatus*	Molnar, Hanek, and Fernando (1974)
	U. lebedevi	*Pimelodus grosskopfi*	Kritsky and Thatcher (1976)
	U. mamaevi	*Cephalosilurus zungaro*	Kritsky and Thatcher (1976)
	U. margolisi	*Corydoras aeneus*	Molnar, Hanek, and Fernando (1974)
	U. megorchis	*Sorubim lima*	Mizelle and Kritsky (1969a)
	U. microstomus	*Hemigrammus microstomus*	Mizelle, Kritsky and Crane (1968)
	***U. minuta*	*Lebistes reticulata*	Kohn and Paperna (1964)
	U. reticulatus	*Lebistes reticulata*	Mizelle and Price (1964)
	U. robustus	*Rhamdia* sp.	Mizelle and Kritsky (1969a)
	***U. spiralocirra*	*Pterophyllum eimekei*	Kohn and Paperna (1964)
	U. stictus	*Hyphessobrycon stictus*	Mizelle, Kritsky, and Crane (1968)
	U. strombicirrus	*Astyanax fasciatus*	Price and Bussing (1967)
			Kritsky and Thatcher (1974)

Table 1.—Continued.

	Parasite	Host	Reference
Urocleidoides.—Continued.	*U. travassosi*	*Rhamdia* sp.	Price (1938)
		R. quelen	Molnar, Hanek, and Fernando (1974)
		R. sebae	Molnar, Hanek, and Fernando (1974)
	U. trinidadensis	*Astyanax bimaculatus*	Molnar, Hanek, and Fernando (1974)
	U. variabilis	*Symphysodon discus*	Mizelle and Kritsky (1969a)
	U. virescens	*Eigenmannia virescens*	Mizelle, Kritsky, and Crane (1968)
"*Urocleidus*"	*U. aequidens*	*Aequidens maroni*	Price and Schlueter (1967)
	U. cavanaughi	*Aequidens maroni*	Price (1966)
	U. crescentis	*Serrasalmus nattereri*	Mizelle and Price (1965)
	U. orthus	*Serrasalmus nattereri*	Mizelle and Price (1965)
Curvianchoratinae			
Curvianchoratus	*C. hexacleidus*	*Curimata argentea*	Hanek, Molnar, and Fernando (1974)
Linguadactyloidinae			
Linguadactyloides	*L. brinkmanni*	*Colossoma macropomum*	Thatcher and Kritsky (1983)
Monocotylidae			
Potamotrygonocotyle	*P. tsalickisi*	*Potamotrygon circularis*	Mayes, Brooks, and Thorson (1981)
Hexabothriidae			
Paraheteronchocotyle	*P. amazonensis*	*Potamotrygon circularis*	Mayes, Brooks, and Thorson (1981)

[1] Genera in quotes are not unique to the Neotropical Region.

* These species and their host are recent introductions to the Neotropical Region by man.

** This species is tentatively placed in Ancyrocephalinae until more is known about its internal anatomy and morphology of its haptoral armament.

*** These species, originally described in *Gussevia* Kohn and Paperna, 1964, are placed in *Urocleidoides* since we consider *Gussevia* a junior synonym of *Urocleidoides*.

After this paper went to press, we became aware of two papers by D. M. Suriano, in which three new species of Monogenea were described from freshwater fishes of Argentina: *Notodiplocerus singularis* Suriano, 1980 (Ancyrocephalinae) from *Pseudocurimata gilberti* (in Neotropica 26:131–143); and *Androspira triangula* Suriano, 1981, and *A. chascomusensis* Suriano, 1981 (Ancyrocephalinae) from *Pseudocurimata gilberti* (in Neotropica 27:67–78). Both *Notodiplocerus* and *Androspira* were proposed as new genera in Suriano's papers.

treated and parasites collected from the gills and stored according to the procedures of Kritsky and Thatcher (1974). Parasites were stained with Mayer's carmine or Gomori's trichrome and mounted in permount for observing internal organs. Other specimens were mounted unstained in Gray and Wess' medium for study of sclerotized structures. Measurements of parasites were made according to the guidelines of Mizelle and Klucka (1953) except that the cirrus measurement represents the diameter of the first ring (proximal) of the cirrus coil; all measurements are in micrometers. Figures were prepared with the aid of a microprojector or camera lucida. Type-specimens are deposited in the collections of the Instituto Nacional de Pesquisas da Amazônia (INPA), the helminthological collection of the National Museum of Natural History, Smithsonian Institution (USNM), and the University of Nebraska State Museum (UNSM) as indicated below.

Gonocleithrum, new genus

Diagnosis.—Dactylogyridae, Ancyrocephalinae. Body divisible into cephalic region, trunk, peduncle, and haptor. Tegument thin, smooth. Cephalic lobes, head organs, cephalic glands present. Four eyes. Mouth subterminal, midventral; pharynx muscular, glandular; esophagus present; intestinal crura 2, confluent posterior to testis, lacking diverticulae. Gonads intercecal, overlapping; testis dorsoposterior to ovary. Vas deferens looping left intestinal crus; seminal vesicle a simple dilation of vas deferens; copulatory complex comprising coiled or modified coiled cirrus, accessory piece. Vagina sinistral, seminal receptacle present. Ventral Y-shaped gonadal bar lying near anterior end of ovary. Vitellaria well developed. Haptor armed with dorsal and ventral pair of anchors, dorsal and ventral bar, 7 pairs of flexible hooks with ancyrocephaline distribution (Mizelle 1936). Parasites of Osteoglossidae.

Type-species and host.—*Gonocleithrum planacrus* n. sp. from *Osteoglossum bicirrosum* Vandelli, Janauacá Lake, near the south bank of the Solimões River, Manaus, Amazonas, Brazil.

Other species.—*Gonocleithrum aruanae* n. sp., *G. coenoideum* n. sp., *G. cursitans* n. sp., *G. planacroideum* n. sp., all from *Osteoglossum bicirrosum.*

Remarks.—*Gonocleithrum* is similar to the Neotropical genus *Urocleidoides* Mizelle and Price, 1964, in that the cirrus is comprised of a coil with few to many rings and by the general arrangement of the haptoral armament. The new genus differs from *Urocleidoides* by possessing a Y-shaped gonadal bar near the anterior end of the ovary.

Based on the fact that *Urocleidoides* species occur on fishes from several orders and families, Gussev (1978) suggests that this genus may be an assemblage of species representing several different genera. In fact, if it were not for the presence of the gonadal bar, the five following species could be placed in *Urocleidoides* as it is defined at present. All five species of *Gonocleithrum* are from *Osteoglossum bicirrosum* which is a member of the primitive order of bony-tongued fishes, Osteoglossiformes. No species of *Urocleidoides* has been reported from this host group.

Price and Nowlin (1967) reported *Dawestrema cycloancistrium* from the gills of *Arapaima gigas* (Osteoglossidae, Arapaiminae) in the Amazon River and its tributaries. Also, Paperna (1969) described *Heterotesia voltae* from *Heterotis*

niloticus (Osteoglossidae, Heterotinae) in Africa. Species of *Gonocleithrum* are distinguished from these ancyrocephalines infesting fishes of the Osteoglossiformes by possessing a gonadal bar.

The function of the gonadal bar is not clear, but it could be involved in orientation during copulation. The protruding anterior arms of the bar form a pouch-like structure on the ventral surface of the worm that could assist in positioning of the copulating partner. We feel that the gonadal bar is not analogous to the vaginal sclerite of some *Urocleidoides* species (*U. reticulatus* Mizelle and Price, 1964, and *U. anops* Kritsky and Thatcher, 1974), which apparently functions as a supporting structure of the vagina.

Gonocleithrum planacrus, new species
Figs. 1–8

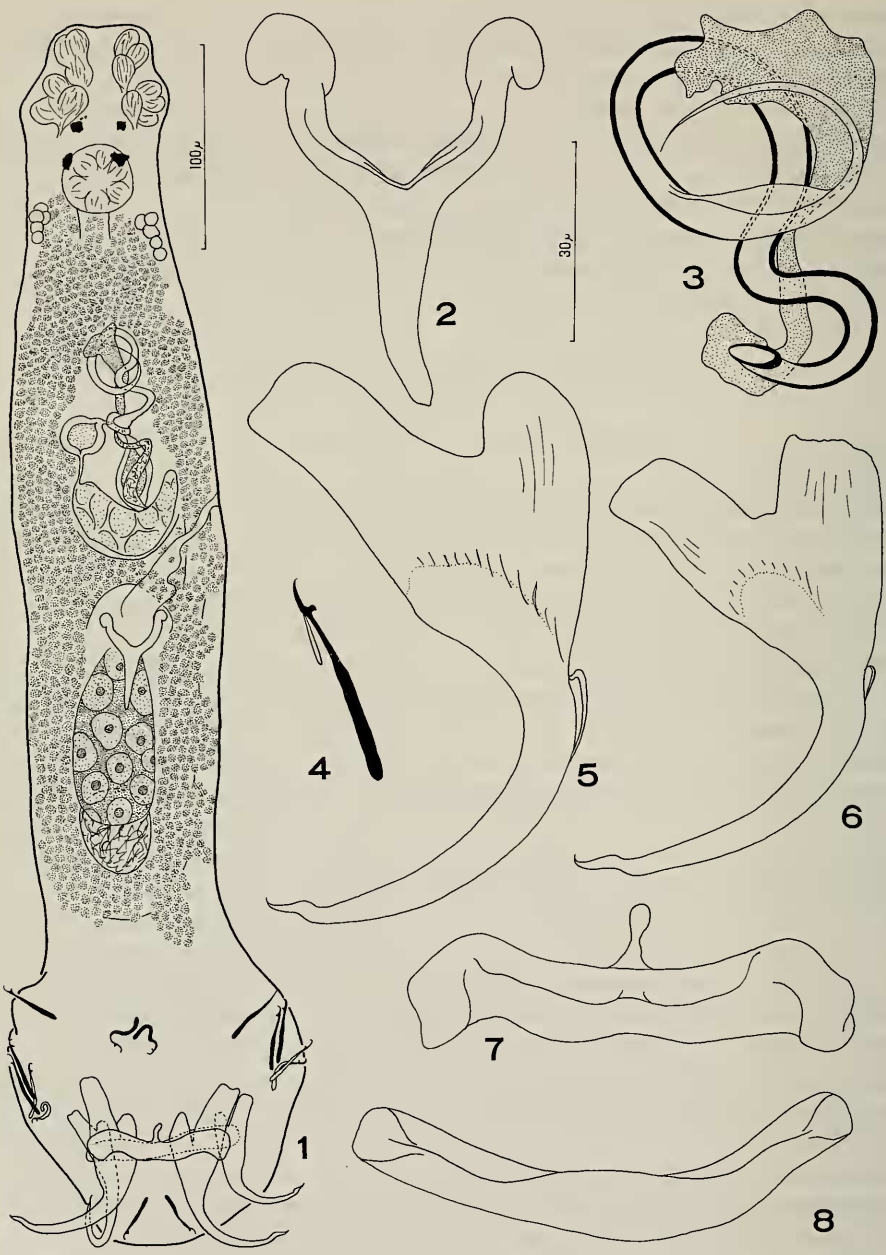
Type-specimens.—Holotype, INPA-234-1; paratype, USNM 77377; paratype, UNSM 21480.

Description (based on 3 specimens).—Body fusiform; length 616 (604–628), greatest trunk width 100 (98–102) near midlength. Cephalic lobes well developed, 2 terminal, 2 bilateral; head organs large, lying in cephalic lobes and adjacent cephalic area; cephalic glands unicellular, situated in 2 bilateral groups posterolateral to pharynx near ventral surface. Members of anterior pair of eyes smaller, usually closer together than members of posterior pair; eye granules small, irregular to subovate; accessory granules absent or very few in proximity of eyes. Pharynx spherical, 35 (33–37) in diameter. Peduncle broad; haptor subhexagonal, 147 (143–151) wide, 136 (128–144) long. Anchors similar in shape; each with large base, short shaft, point with subterminal bends; ventral anchor 83 (79–85) long, base 42 (35–50) wide; dorsal anchor 61 (60–64) long, base 38 (33–43) wide. Anchor filament variable, double. Ventral bar 71 (68–76) long, broad, rod-shaped, with anteriorly directed medial process; dorsal bar 80 (74–89) long, rod-shaped, with slight medial bend. Hooks similar; each with inflated proximal shank, depressed thumb, fine point; hook pairs 1, 2, 3, 4, 6, 7—31 (30–32) long, pair 5–20 to 21 long; FH loop ⅓ shank length. Cirrus a coiled, heavily sclerotized tube, with 2 rings, subterminal flange, finely tapered tip; diameter of complete ring 28 (27–29). Accessory piece a variable fleshy structure basally articulated to cirrus base. Testis subspherical, 38 to 39 in diameter; seminal vesicle inconspicuous; prostatic reservoirs 2, with thick walls; prostate a large crescent of cells located anterior to vitelline commissure. Ovary elongate ovate, 45 (42–49) wide, 105 (100–110) long; seminar receptacle, oviduct, ootype, uterus, genital pore not observed; vagina an irregular and lightly sclerotized tube; vitellaria dense, coextensive with gut. Gonadal bar 62 to 63 long; anterior arms expanded, recurved.

Remarks.—*Gonocleithrum planacrus* is the type-species for the genus. The specific name is from Greek (*plano* = wandering + *acrus* = tip) and refers to the shape of the anchor points.

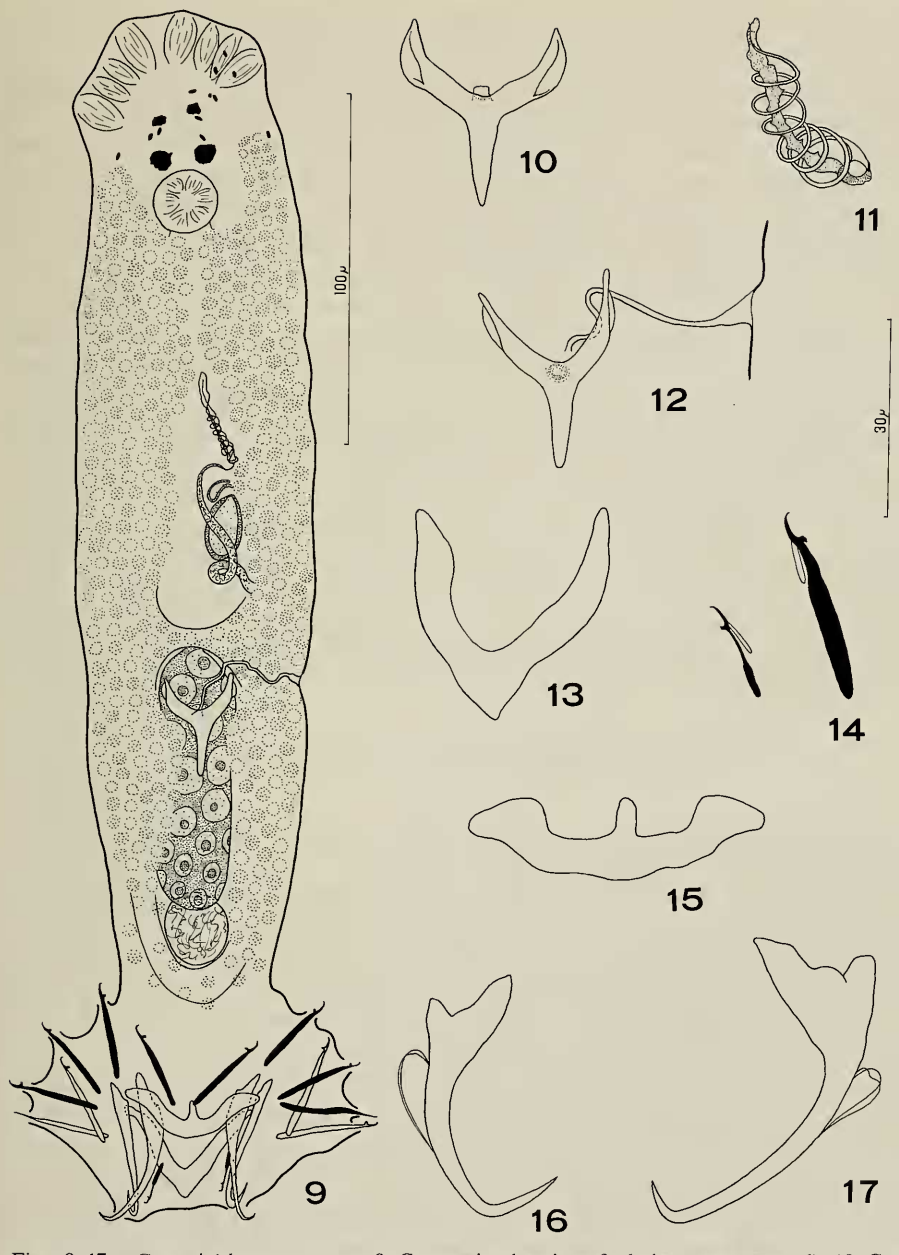
Gonocleithrum arnanae, new species
Figs. 9–17

Type-specimens.—Holotype, INPA-236-1; paratypes, INPA-236-2 to 5; paratypes, USNM 77379; paratype, USNM 21482.



Figs. 1–8. *Gonocleithrum planacrus*: 1, Ventral view of holotype; 2, Gonadal bar; 3, Copulatory complex; 4, Hook; 5, Ventral anchor; 6, Dorsal anchor; 7, Ventral bar; 8, Dorsal bar. All figures are drawn to the same scale (30 micrometers) except Fig. 1 (100 micrometers).

Description (based on 20 specimens).—Body foliform; length 334 (309–378), greatest trunk width 70 (52–91) in anterior half. Two terminal, 2 bilateral cephalic lobes inconspicuous; well-developed head organs usually in 4 distinct pairs; cephalic glands obscured by vitellaria. Eyes equidistant, members of anterior pair



Figs. 9–17. *Gonocleithrum aruanae*: 9, Composite drawing of whole mount (ventral); 10, Gonadal bar; 11, Copulatory complex; 12, Vagina and gonadal bar; 13, Dorsal bar; 14, Hooks; 15, Ventral bar; 16, Dorsal anchor; 17, Ventral anchor. All figures are drawn to the same scale (30 micrometers) except Fig. 9 (100 micrometers).

smaller than those of posterior pair; eye granules ovate, medium in size; accessory granules throughout cephalic area. Pharynx spherical, 18 (15–20) in diameter. Peduncle moderately broad; haptor subhexagonal, 92 (68–106) wide, 71 (60–76) long. Anchors dissimilar; ventral anchor 45 (38–50) long, with well-developed

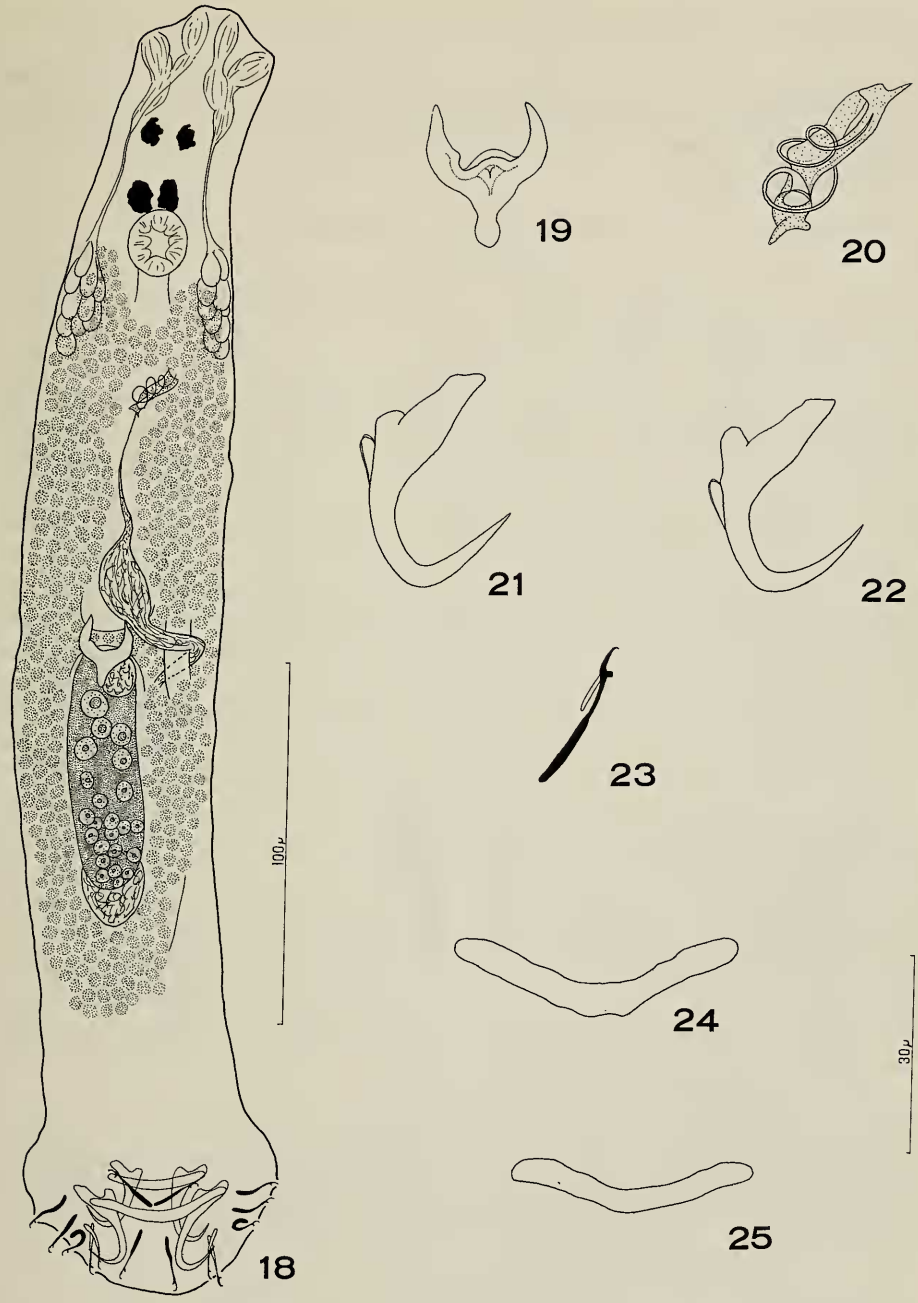
roots, elongate shaft, sharply recurved point, base 20 (18–22) wide; dorsal anchor 36 (34–38) long, with small base, curved shaft, straight point, base 14 (12–16) wide. Anchor filament variable, double. Ventral bar 36 (32–39) long, with enlarged terminations, anteriorly directed medial process; dorsal bar V-shaped, 35 (32–37) long. Hook pairs 1, 2, 3, 4, 6, 7—28 (24–32) long, similar; each with inflated shank, depressed thumb, fine point. Hook pair 5—15 (14–16) long, with basal inflation of shank, erect thumb, fine point. FH loop ¼ shank length except pair 5 (½ shank length). Cirrus a coil of about 7 rings, basal ring diameter 9 (8–10); accessory piece variable, lying within cirrus rings, articulated to cirrus base. Testis subspherical, 22 (15–27) in diameter; seminar vesicle poorly defined; prostatic reservoirs 2, each with thick wall; prostate not observed. Ovary elongate ovate 24 (20–31) wide, 53 (46–63) long; seminar receptacle, oviduct, ootype, uterus, genital pore not observed; vagina a simple sclerotized tube with distal flare; vitellaria dense, coextensive with gut. Gonadal bar 30 (28–33) long, with anterior arms slightly longer than base; small truncate process near base of anterior arms.

Remarks.—This species is easily confused with *Gonocleithrum cursitans* n. sp., with which it was found on *Osteoglossum bicirrosum* in about equal numbers. The anchors, bars, and hooks are nearly impossible to distinguish in these species. However, *G. aruanae* n. sp. is separated from *G. cursitans* by having 1) a stout, more robust gonadal bar, 2) cirrus rings with noticeably smaller diameter, and 3) a simple tubular vagina which lacks the proximal coils of *G. cursitans*. The species name is derived from the local name of the host.

Gonocleithrum coenoideum, new species
Figs. 18–25

Type specimens.—Holotype, INPA-238-1; paratypes, INPA-238-2 to 6; paratypes, USNM 77381; paratype, UNSM 21484.

Description (based on 34 specimens).—Body fusiform; length 389 (294–477), greatest trunk width 80 (45–117) near midlength. Cephalic lobes inconspicuous, 2 terminal, 2 bilateral; head organs well developed, one lying in each cephalic lobe and adjacent cephalic area; cephalic glands numerous, unicellular, lying posterolateral to pharynx. Eyes large; members of posterior pair larger, closer together than those of anterior pair; eye granules usually small, subovate; accessory granules usually absent. Pharynx spherical, 21 (18–23) in diameter. Peduncle broad; haptor subhexagonal, 67 (45–83) wide, 55 (38–76) long. Anchors similar, each with elongate superficial root, short shaft, long curved point; ventral anchor 32 (28–34) long, base 16 (13–19) wide; dorsal anchor 31 (28–35) long, base 16 (13–18) wide. Anchor filament variable, double. Bars similar, broadly V-shaped; ventral bar 37 (32–42) long; dorsal bar 29 (25–34) long. Hooks similar, each with inflated proximal shank, depressed thumb, fine point; hook pairs 1, 2, 3, 4, 6, 7—22 (20–24) long, pair 5—19 (18–20) long. FH loop ⅓ shank length. Cirrus a coil with 3–4 rings, basal ring diameter 11 (10–12); accessory piece variable, basally articulated to cirrus base. Testis subovate, 12 to 13 in diameter; seminal vesicle large; prostatic reservoirs not observed. Ovary bacilliform, 18 (13–22) wide, 59 (49–69) long; oviduct, ootype, uterus, genital pore not observed; vagina nonsclerotized; seminar receptacle subspherical, lying dorsal to gonadal bar; vitellaria



Figs. 18–25. *Gonocleithrum coenoideum*: 18, Composite drawing of whole mount (ventral); 19, Gonadal bar; 20, Copulatory complex; 21, Ventral anchor; 22, Dorsal anchor; 23, Hook; 24, Ventral bar; 25, Dorsal bar. All figures are reproduced to the same scale (30 micrometers) except Fig. 18 (100 micrometers).

dense, coextensive with gut. Gonadal bar 23 (20–26) long, with tapered arms and bulbous base.

Remarks.—*Gonocleithrum coenoideum* is not closely related to any of the species in the genus. However, the structure of the copulatory complex suggests affinity to *G. cursitans* and *G. aruanae*. The specific name is from Greek (*coeno* = common + *oides* = like).

Gonocleithrum cursitans, new species
Figs. 26–33

Type-specimens.—Holotype, INPA-237-1; paratypes, INPA-237-2 to 4; paratypes, USNM 77380; paratype, UNSM 21483.

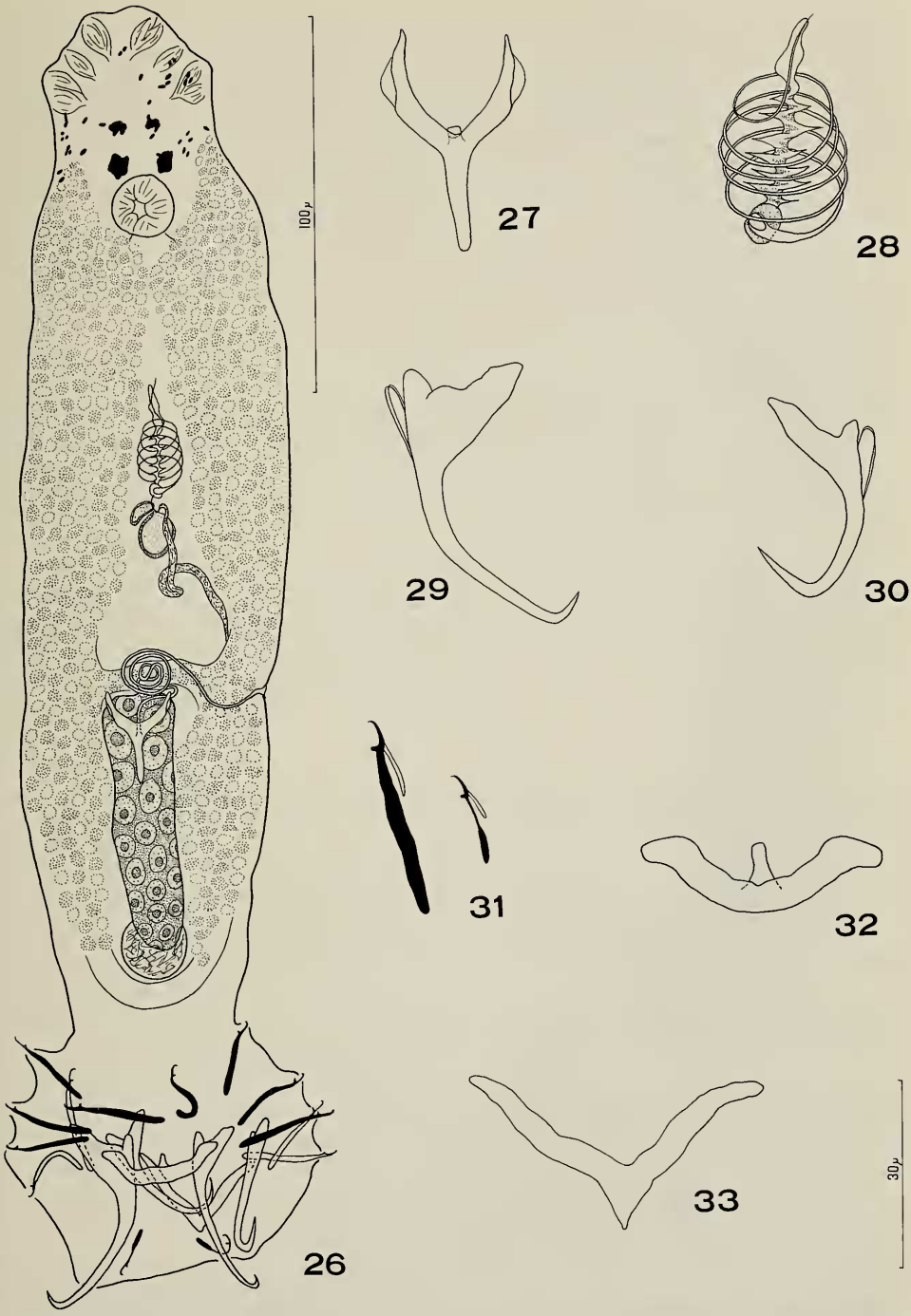
Description (based on 18 specimens).—Body foliform; length 338 (279–378), greatest trunk width 69 (53–83) in anterior half. Two terminal, 2 bilateral cephalic lobes poorly developed; head organs well developed, 3 pairs; cephalic glands obscured by vitellaria. Eyes equidistant, members of posterior pair larger than those of anterior pair; eye granules elongate ovate, medium in size; accessory granules throughout cephalic region. Pharynx spherical, 15 (12–17) in diameter. Peduncle broad; haptor subhexagonal, 91 (75–121) wide, 66 (53–72) long. Anchors dissimilar; ventral anchor 43 (41–45) long, with well-developed roots, bent shaft, sharply recurved point, base 21 (20–23) wide; dorsal anchor 34 (32–36) long, with elongate superficial root, curved shaft, long point, base 14 (13–15) wide. Anchor filament variable, double. Ventral bar 40 (36–47) long, with enlarged ends, median anterior process; dorsal bar 40 (35–47) long, broadly V-shaped. Hook pairs 1, 2, 3, 4, 6, 7 similar, each with inflated shank, depressed thumb, fine point; hook pair 1—36, pair 2—26 (25–27), pairs 3, 4, 6, 7—30 (28–33) long; Hook pair 5—15 to 16 long, with inflated proximal shank, erect thumb, fine point. FH loop ⅓ shank length except hook 5 (½ shank length). Cirrus a coil with 5–6 rings, basal ring diameter 20 (18–23); accessory piece a spiral rod lying within cirrus rings, basally articulated to cirrus base. Testis subspherical, 19 (15–23) in diameter; seminal vesicle poorly defined; prostatic reservoirs 2, with conspicuous walls. Ovary bacilliform, 23 (22–24) wide, 60 (48–72) long; oviduct, seminal receptacle, ootype, uterus, genital pore not observed. Vagina a delicate sclerotized tube, coiled anterior to gonadal bar; vitellaria dense, coextensive with gut. Gonadal bar with inconspicuous flanges on anterior arms, small medial truncate process near base of anterior arms; bar 30 (27–33) long.

Remarks.—*Gonocleithrum cursitans* is obviously a close relative of *G. aruanae*. Distinguishing characteristics, which include the morphology of the gonadal bar, copulatory complex, and vagina, are explained in the remarks for *G. aruanae*. The specific name is from Latin (*cursitans* = running about).

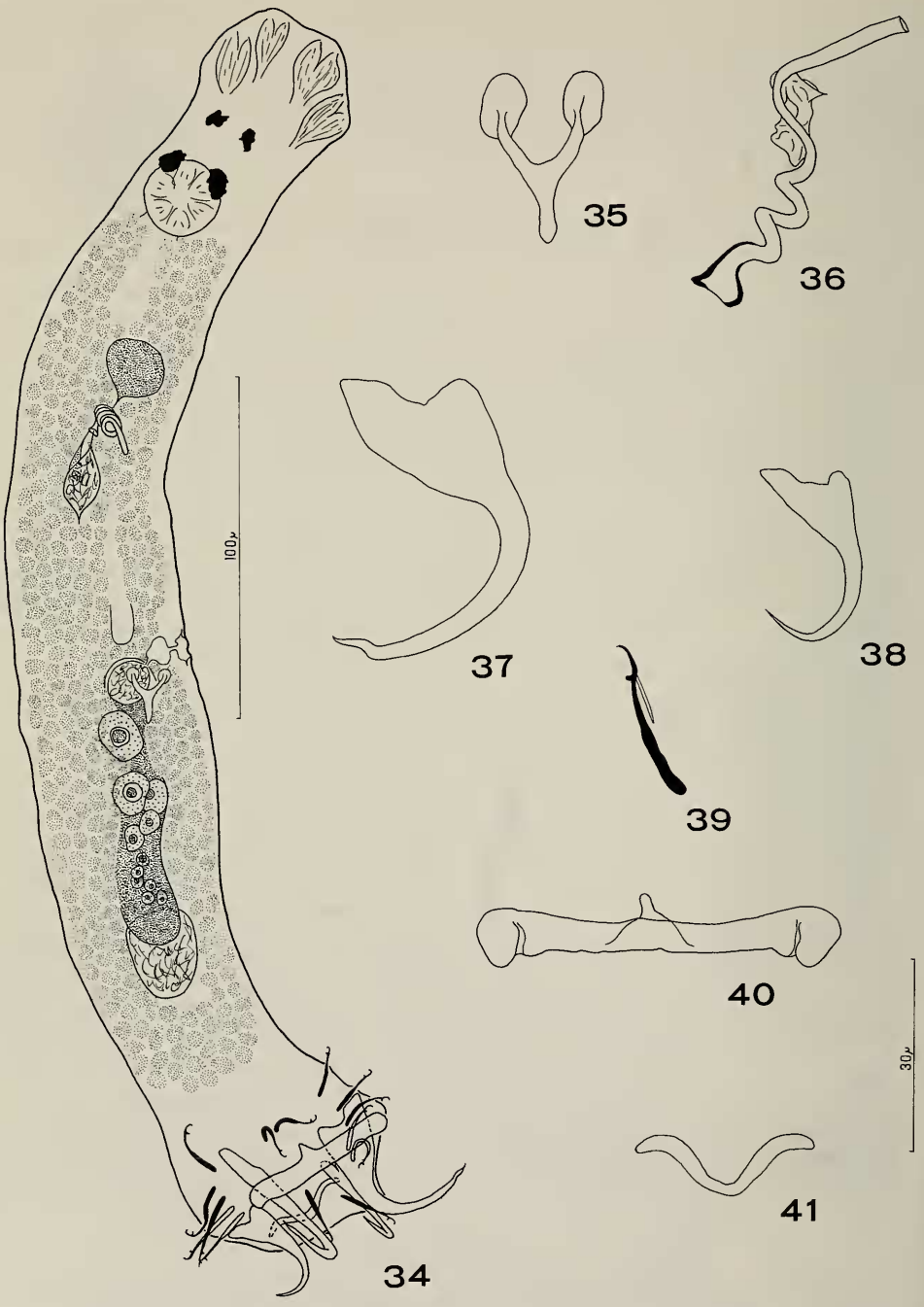
Gonocleithrum planacroideum, new species
Figs. 34–41

Type-specimens.—Holotype, INPA-235-1; paratypes, USNM 77378; paratype, UNSM 21481; INPA-235-2.

Description (based on 6 specimens).—Body fusiform; length 372 (340–408), greatest trunk width 58 (53–72) at level of gonads. Two terminal, 2 bilateral cephalic lobes poorly developed; head organs well developed, usually 2 pairs; cephalic glands inconspicuous. Members of posterior pair of eyes larger, farther



Figs. 26–33. *Gonocleithrum cursitans*: 26, Composite drawing of whole mount (ventral); 27, Gonadal bar; 28, Copulatory complex; 29, Ventral anchor; 30, Dorsal anchor; 31, Hooks; 32, Ventral bar; 33, Dorsal bar. All figures are drawn to the same scale (30 micrometers) except Fig. 26 (100 micrometers).



Figs. 34–41. *Gonocleithrum planacroideum*: 34, Ventral view of holotype (specimen slightly rolled to left); 35, Gonadal bar; 36, Copulatory complex; 37, Ventral anchor; 38, Dorsal anchor; 39, Hook; 40, Ventral bar; 41, Dorsal bar. All figures are drawn to the same scale (30 micrometers) except Fig. 34 (100 micrometers).

apart than those of anterior pair; eye granules irregular; accessory granules absent. Pharynx spherical, 21 (19–22) in diameter; gut inconspicuous. Peduncle broad; haptor subhexagonal, 69 (64–76) wide, 64 (56–68) long. Anchors dissimilar; ventral anchor 41 (36–47) long, with large base, curved shaft, point with subterminal bends, base 20 (15–23) wide; dorsal anchor 28 (25–30) long, with well-developed roots, curved shaft and point, base 12 (11–13) wide. Anchor filament not observed. Ventral bar 51 (46–58) long, rod-shaped, with expanded ends, medial anterior process; dorsal bar broadly V-shaped, 30 (29–31) long. Hooks similar, each with inflated proximal shank, erect thumb, fine point; hook pairs 1, 2, 3, 4, 6, 7—23 (21–26) long, pair 5—17 to 18 long; FH loop 2/5 shank length. Cirrus a coiled tube with 3–4 rings, basal ring diameter 6 (5–7); accessory piece variable, not articulated to cirrus base. Testis subovate, 24 (16–32) in diameter; vas deferens not observed; seminal vesicle large; prostatic reservoirs with delicate wall (one observed). Ovary bacilliform, 28 wide, 66 (68–70) long; oviduct, uterus, ootype, genital pore not observed; vagina tubular with variable diameter; seminal receptacle subspherical, lying dorsal to gonadal bar; vitelleria dense, coextensive with gut. Gonadal bar 25 (23–28) long, with enlarged terminations of anterior arms.

Remarks.—This species most closely resembles *Gonocleithrum planacrus* as shown by the morphology of the ventral anchor. The two species are easily separated by the comparative morphology of the dorsal anchor, dorsal bar, gonadal bar, and copulatory complex. The specific name, from Greek, indicates the relationship of these two species.

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